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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/559,861

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Hans Lonsinger

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EXAMINER

KREINER, MICHAEL B

ART UNIT

PAPER NUMBER

3644

MAIL DATE

DELIVERY MODE

03/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No.	Applicant(s)	
	10/559,861	LONSINGER ET AL.	
	Examiner	Art Unit	
	Michael Kreiner	3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2008.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55-82 is/are pending in the application.
- 4a) Of the above claim(s) 66, 73 and 74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55-65, 64-72, 75-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 55-57, 59-65, 67-72, and 75-81 are rejected under 35 U.S.C. 102(a) as being anticipated by Perez (U.S. Pat. No. 6,644,599).

Perez teaches a wing with a first (55a in fig. 3) and second (55b in fig. 3) cover skin that has a flexible region at the wing tip (the entire wing, including a region near the wing tip, can be constructed such that the wing is flexible, col. 2 *l.* 64-67). The flexible region of the wing tip (8 in fig. 1) is shown as box segments oblique to the wing chord direction and essentially perpendicular to the leading edge region along the leftmost edge of the wing in figure 1. In figure 1, Perez shows the wing-chord direction as arrow 5 and wing-span direction as arrow 10 (col. 2 *l.* 51-60). The flexible region comprises several torsion boxes (53 in fig. 3) arranged next to one another and formed by the first and second cover skins, as well as at least one spar (52 in fig. 3) (abstract). The torsion boxes are connected to vertebrae (61 in fig. 3), which are connected at the intersection of the transmission elements (64) and spars (52) by various joint mechanisms (68 and 69) (shown in fig. 3-7). These joint mechanisms are also connected to the first and second cover skins (shown in fig. 4-7). The vertebrae are also connected to a drive chord (62 in fig. 3), whose length is changed using a control signal (abstract). As the length of the drive chord increases or decreases, the torsion boxes flex with respect to each other in a manner that changes

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the wing tip's profile (figs. 8-10). As the first and second cover skin move relative to each other, a spacer (81 in fig. 3) and an end piece (77 in fig. 3) hold the two skins in connection with each other as the flexible region flexes.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 55, 58, and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perez in view of Renzelmann et al. (U.S. Pat. No. 5,350,135).

The discussion above regarding the rejection under 102(a) is relied upon.

Perez teaches an aircraft with flexible regions at various locations on the wings. Perez teaches that various regions in the wing, including the wing box 3 or even the entire wing 1, can be made flexible (col. 2 l. 64-67). Perez fails to specifically teach a wing that has a flexible region designed to curl the wing tips such that the axis of curl is perpendicular to the leading edge region of the wing. Renzelmann et al. teach that a flexible or hinged region may be provided between the body of a wing 4 and a wing tip 14 such that the wing tips can be curled while the aircraft is on the ground, thus reducing the space requirements of the aircraft (col. 1 l. 20-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to follow Perez's suggestion that any or all regions of the wing can be designed to be flexible and design a wing such that a flexible region connects the wing tip to the wing body. Such a design would allow the aircraft of Perez to have a smaller space requirement. For such a configuration,

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the flexible region would be arranged such that the spars extend perpendicular to the leading edge region.

Response to Arguments

5. Applicant's arguments with respect to claims 55-82 have been considered but are moot in view of the new ground(s) of rejection.

Regarding Applicant remark #3 in the response filed 12/5/08, new claims 66, 73, and 74, which correspond to previously withdrawn claims, have been withdrawn from further consideration.

Regarding #4, new claims 55-82 have overcome 112(2) rejections for their corresponding cancelled claims, as the new claims more clearly state the Applicant's invention.

Regarding #5, new independent claim 55 overcomes Brown et al., having incorporated limitations not taught in the Brown reference.

Regarding #6 (p. 22), the Applicant has argued that it would not be obvious to orient a flexible region on a wing such that a wing tip region is flexed such that it curls in towards the body of the aircraft.

First, it is noted that Applicant's arguments regarding claim 55 are more specific than the claim itself, and in particular no limitations in claim 55 require the flexible region to curl around an axis perpendicular to the leading edge (in other words curling towards the body of the aircraft). The limitation that the wing tip comprises an end piece is met by the embodiment taught in Peres col. 2 l. 64-67, in which the whole wing is flexible, and as such the wing tip would include an end piece to handle the relative displacements of the top and bottom skins.

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Only dependent claim 58 and independent claim 82 capture the features that the Applicant has argued are not taught or suggested by Perez.

Claims 58 and 82 require that the spars extend perpendicularly to the leading edge region. Applicant has argued that it would not be obvious to use the flexible wing structure of Perez to design a wing with rotatable wing tips. Perez clearly discloses that a wing can be designed such that areas of the wing other than the leading and trailing edges are flexible (col. 2 l. 64-67). Renzelmann et al. clearly teach an advantage to designing a wing whose wing tips can fold up (or down), as discussed above. Even if Perez had failed to teach regions other than the leading and trailing edge being flexible, it would still have been obvious to use the flexible wing technology to create folding wingtips. Applicant has argued that Perez provides no suggestion, motivation, or predictable result. It is the Examiner's position that Perez provides the suggestion, and the inherent similarities between a front edge, distal edge, and back edge of a wing indicate that an apparatus that flexes the back edge of a wing would predictably flex a distal edge of a wing. Renzelmann et al. clearly teach a motivation for creating a wing with folding tips.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Friday 9am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J. Carone/
Supervisory Patent Examiner, Art Unit 3641

/M. K./
Examiner, Art Unit 3644